# RESEARCH, DEVELOPMENT & TECHNOLOGY TRANSFER
# QUARTERLY PROGRESS REPORT

Wisconsin Department of Transportation
DT1241 02/2011

INSTRUCTIONS:
Research project investigators and/or project managers should complete a quarterly progress report (QPR) for each calendar quarter during which the projects are active.

| | | |
|---|---|---|
| **WisDOT research program category:**<br>☐ Policy research ☒ Wisconsin Highway Research Program<br>☐ Other ☐ Pooled fund TPF# | | Report period year: 2013<br>☐ Quarter 1 (Jan 1 – Mar 31)<br>☐ Quarter 2 (Apr 1 – Jun 30)<br>☐ Quarter 3 (Jul 1 – Sep 30)<br>☒ Quarter 4 (Oct 1 – Dec 31) |
| Project title: Reflective Cracking Between Precast Prestressed Box Girders | | |
| Project investigator: Upul Attanayake | Phone: 269-276-3217 | E-mail: upul.attanayake@wmich.edu |
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| WisDOT contact: William Oliva | Phone: 608-266-0075 | E-mail: william.oliva@dot.wi.gov |
| WisDOT project ID: 0092-14-01 | Other project ID: | Project start date: 8/20/2013 |
| Original end date: October 20, 2015 | Current end date: | Number of extensions: |

**Project schedule status:**
☒ On schedule ☐ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

**Project budget status:**

| Total Project Budget | Expenditures Current Quarter | Total Expenditures | % Funds Expended | % Work Completed |
|---|---|---|---|---|
| $84,999.00 | 10500 | 10739 | 12.6 | 31 |

**Project description:**
The adjacent precast concrete box beam bridge is the bridge of choice for short and short-to-medium span bridges due to ease of construction, favorable span-to-depth ratios, aesthetic appeal, and high torsional stiffness. This bridge is losing favor primarily because of persisting performance issues such as longitudinal cracking at the shear key locations that reflects to the deck surface. This bridge was first introduced to the U.S. in the 1950's. Design changes have been incorporated since then primarily for improving performance. However, performance problems, specifically the longitudinal deck cracking, still persist. Reflective deck cracking is identified as the leading cause for triggering other distresses that create safety concerns.
This project will document the best practices, develop implementation recommendations, and demonstrate effectiveness of recommendations through a filed implementation.

**Progress this quarter** (includes meetings, work plan status, contract status, significant progress, etc.):
- Reviewed Wisconsin DOT adjacent box-beam history, details and practices of other DOTs, and materials for shear key.
- Eleven bridges in Wisconsin were inspected to document longitudinal cracking and associated girder and shear key distress. Inspection data was summarized and documented in the report format.
- Online survey was developed and executed.
- Limited testing was performed on shear key grout using non-shrink admixtures to evaluate the suitability as a shear key material.

**Anticipated work next quarter:**
- Complete literature review.
- Compile survey data.

- Develop implementation recommendations.

**Circumstances affecting project or budget:**

**Attach / insert Gantt chart and other project documentation**

- Gantt chart is attached.

FOR WISDOT USE ONLY

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| Staff receiving QPR: K. Dinkins | Date received: 1/2/14 |
| Staff approving QPR: | Date approved: |